

Work Order ID 84240

84240

Page 2

May-08-12 10:39:52 AM

Item ID: D350-748-243

Accept

N900040100

Setup Start ***NS1***

Revision ID: PRELIM

Stop ***NS2***

Item Name: Crosstube Installation, High Aft

Start Date: 5/08/12 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/15/12 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Crosstubes	0.00							
130									
Crosstubes	Memo	0.00							
Crosstubes	1-Drill Tube as per Dwg D350-748-243 Set-up drill table as per QSI 010								
	2-Deburr								
	3-Engrave Part # and Batch # as per Dwg D350-748-243								
	4-Remove all marks from tube within limits of D350-748-241								
	5- Apply a light coat of LPS3 on the interior of tube Batch: _____								
140	QC6- Inspect dimensions to drawing	0.00							
140									
QC	Memo	0.00							
Quality Control									

MO 12-5-10

> MO 12-5-11

> N/A

N/A

Work Order ID 84240

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Item ID: D350-748-243 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: PRELIM Stop ***NS2***
 Item Name: Crosstube Installation, High Aft
 Start Date: 5/08/12 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 5/15/12 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 *180* SprayPaint Spray Painting	SprayPaint Memo 1-Prime inside crosstube as per QSI 005 4.2 2-Paint Outside of Tube as per Dart QSI 005 4.2	0.00 0.00	N/A	CP 12.05.10					
190 *190* QC Quality Control	QC14- Inspect Spray Paint Memo Then, Wrap in plastic bag to protect from scratches	0.00 0.00	N/A	CP 12.05.10					
200 *200* Crosstubes Crosstubes	Crosstubes Memo	0.00 0.00	★	SEE W/D CHG ATTACHED					

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Item ID: D350-748-243 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: PRELIM Stop ***NS2***
Item Name: Crosstube Installation, High Aft
Start Date: 5/08/12 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/15/12 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC5- Inspect part completeness to step on W/O	0.00							
210									
QC	Memo	0.00							
Quality Control									
220	Pick Kit	0.00							
220									
Packaging	Memo	0.00							
Packaging									
230	QC4- 100% Inspect kits for completeness	0.00							
230									
QC	Memo	0.00							
Quality Control									

DP 12-5-11

NIA CP 12-05-10

NIA CP 12-05-10

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Item ID: D350-748-243 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: PRELIM Stop ***NS2***
 Item Name: Crosstube Installation, High Aft
 Start Date: 5/08/12 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 5/15/12 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	Packaging	0.00							
240									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPPD350-748-201								
	Location: _____								
	PPP Rev: _____								
250	QC21- Final Inspection - Work Order Release	0.00							
250									
QC	Memo	0.00							
Quality Control									

NIA FOR TEST ONLY P 12.05.10

W120523
 RD3400
 POSITIVE RECALL
 EFFECTIVE 1205.08 AUTH LN
 RELEASED _____ DATE _____

Picklist Print

May-08-12 10:39:51 AM

Page 1

Work Order ID: 84240

Parent Item: D350-748-243

Start Date: 5/08/12

Required Date: 5/15/12

Parent Item Name: Crosstube Installation, High Aft

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev: PRELIM New Issue LL 12.05.08

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
ALS4-1032-225 Insert		Purchased	No			200	Each	1,084.0000	1	1			

Location	Loc Qty	Loc Code
ST281	1061	
108696	146	
110768	62	
118386	55	
118966	68	
121269	730	
ST282	23	
120410	10	
120451	13	

D3502-1
Support

Manufactured No

200 Each 39.0000

2 2

AB 12-5-11

Location	Loc Qty	Loc Code
ST051	39	
73419	19	
74873	20	

D350-748-243TRN
Crosstube Installation, High Aft

Manufactured No

Each 0.0000

1

MS21920-20
Clamp (per MIL-DTL-8783C)

Purchased No

200 Each 116.0000

2 2

AB 12-5-11

Location	Loc Qty	Loc Code
LG050	116	
116799	8	
120676	12	
121067	46	
121274	50	

Picklist Print

May-08-12 10:39:51 AM

Page 2

Work Order ID: 84240

Parent Item: D350-748-243

Parent Item Name: Crosstube Installation, High Aft

Start Date: 5/08/12

Required Date: 5/15/12

Start Qty: 1.00

Required Qty: 1.00

MS27039-1-10

Purchased

No

200

Each

186.0000

1

1

Screw

Location

Loc Qty

Loc Code

GA

100

120449

100

ST291

86

120120

86

NAS1149D0363J

Purchased

No

Each

3,078.0000

1

Washer

Location

Loc Qty

Loc Code

ST298

3078

117601

61

118077

1

118612

18

119537

33

120142

41

120308

17

120644

232

121243

1175

121524

1500

May-08-12 10:39:51 AM

Shop Packet Print

Page 2

Tube 1

Work Order ID 84236

84236

PRELIMINARY ISSUE

Page 1

Item ID: D350-748-243TRN

Accept

N900040100

Setup Start *NS1*

Revision ID: PRELIM

Item Name: Crosstube Installation, High Aft

Stop *NS2*

Start Date: 5/08/12 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/15/12 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

100

0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs on both ends as per Folio _____
2-Turn first side as per Folio _____
3- File transition lines smooth.
FOLIO REV: _____
DWG REV: _____

1 Ø

amml
12/05/08
for
KC

110

QC1- Inspect dimensions to dimension sheet

0.00

110

QC

Memo

0.00

Quality Control

1 Ø

amml
12/05/08
for
KC

Work Order ID 84236***84236***

Page 2

May-08-12 10:38:07 AM

Item ID: D350-748-243TRN

Accept

N900040100

Setup Start

NS1

Revision ID: PRELIM

Stop

NS2

Item Name: Crosstube Installation, High Aft

Start Date: 5/08/12 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/15/12 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start

NR1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
120	MORI SEIKI CNC LATHE LARGE								
Mori Seiki	Memo	0.00							
Mori Seiki CNC Lathe Large	1-Turn second side as per Folio _____ 2- File transition lines smooth. 3-Scribe Part & Batch as per Dwg D350-748-143 FOLIO REV: _____ DWG REV: _____								<i>nmk</i> <i>12/05/08</i> <i>for</i> <i>kc</i>
130	QC1- Inspect dimensions to dimension sheet	0.00							
130									
QC	Memo	0.00							
Quality Control									<i>nmk</i> <i>12/05/08</i> <i>for</i> <i>kc</i>
140	QC8- Inspect parts - second check	0.00							
140									
QC	Memo	0.00							
Quality Control									<i>DP</i> <i>12-5-8</i> <i>for</i> <i>kc</i>

Work Order ID 84236

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Item ID: D350-748-243TRN Accept ***N900040100*** Setup Start ***NS1***
Revision ID: PRELIM Stop ***NS2***
Item Name: Crosstube Installation, High Aft
Start Date: 5/08/12 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/15/12 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Large Fab	0.00							
150									
Crosstubes	Memo	0.00							
Crosstubes	1-Grind machining marks								
190	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	Identify and stock in kanban rack Location: _____								
200	QC21- Final Inspection - Work Order Release	0.00							
200									
QC	Memo	0.00							
Quality Control									

U 120523

POSITIVE RECALL
EFFECTIVE 12/5/08 AUTH U
RELEASED _____ DATE _____

Picklist Print

May-08-12 10:38:06 AM

Page 1

Work Order ID: 84236

Parent Item: D350-748-243TRN

Start Date: 5/08/12

Required Date: 5/15/12

Parent Item Name: Crosstube Installation, High Aft

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev: PRELIM New Issue LL 12.05.08

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6021-125 Crosstube Material - 17-4PH SS		Manufactured	No				Each	0.0000		684152			

Item	Qty	Part Number	Description
	-243		
1	X	D350-748-243	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
2	1	D6021-125	CROSSTUBE (OR D6018-125)
3	2	D3502-1	SUPPORT
5	1	AELS-1032-225	INSERT
6	1	NAS1149D0363J	WASHER (OR AN960JD10)
7	2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
8	1	MS27039-1-10	SCREW

GENERAL NOTES:

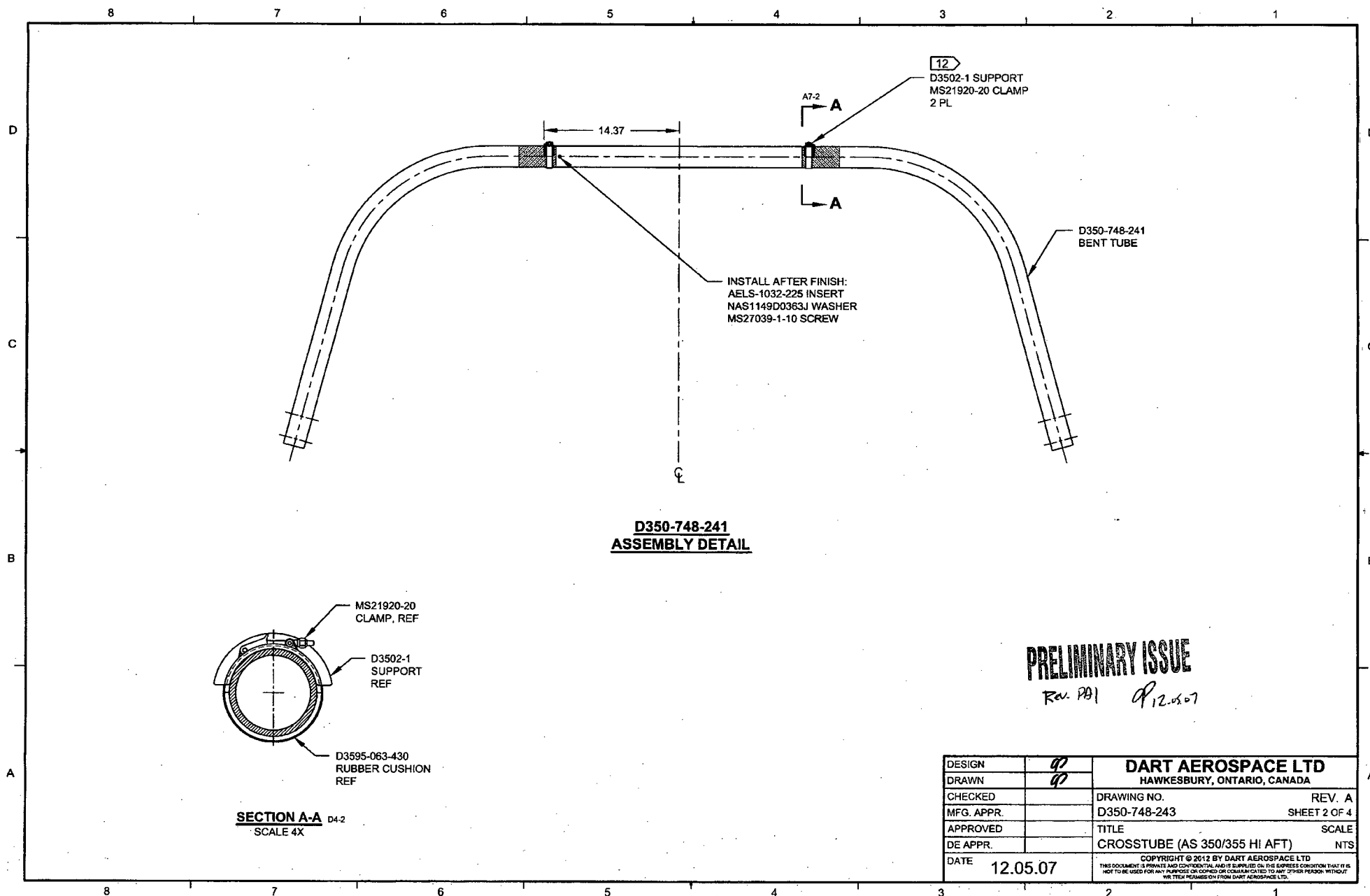
- 1) MATERIAL: MANUFACTURED FROM D6021-125 (17-4PH)
FINISHED LENGTH = 122.700±0.06
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-243" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 29.85 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.297 HOLE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT ALL EDGES FROM MACHINING
LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER
BENDING.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO
BENDING IS 6% BASED ON O.D.
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES,
NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY.
CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE
MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO
CRACKING/CHIPPING/GROOVES.
- 12) TORQUE CLAMPS 60 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT
NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 13) MAX TWIST AFTER BENDING: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN
CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.25 (ZN C1-3).

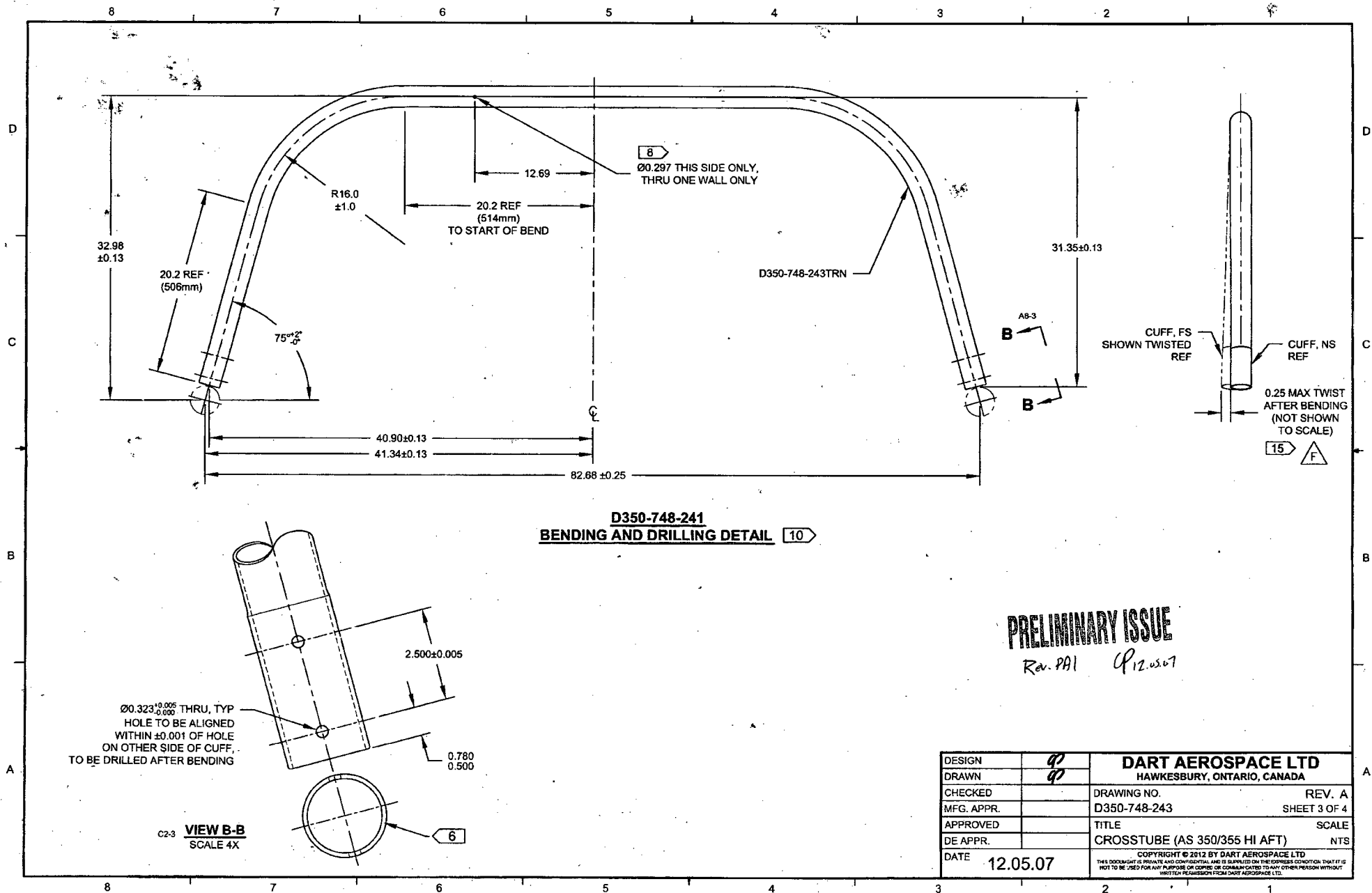
W/O 84236

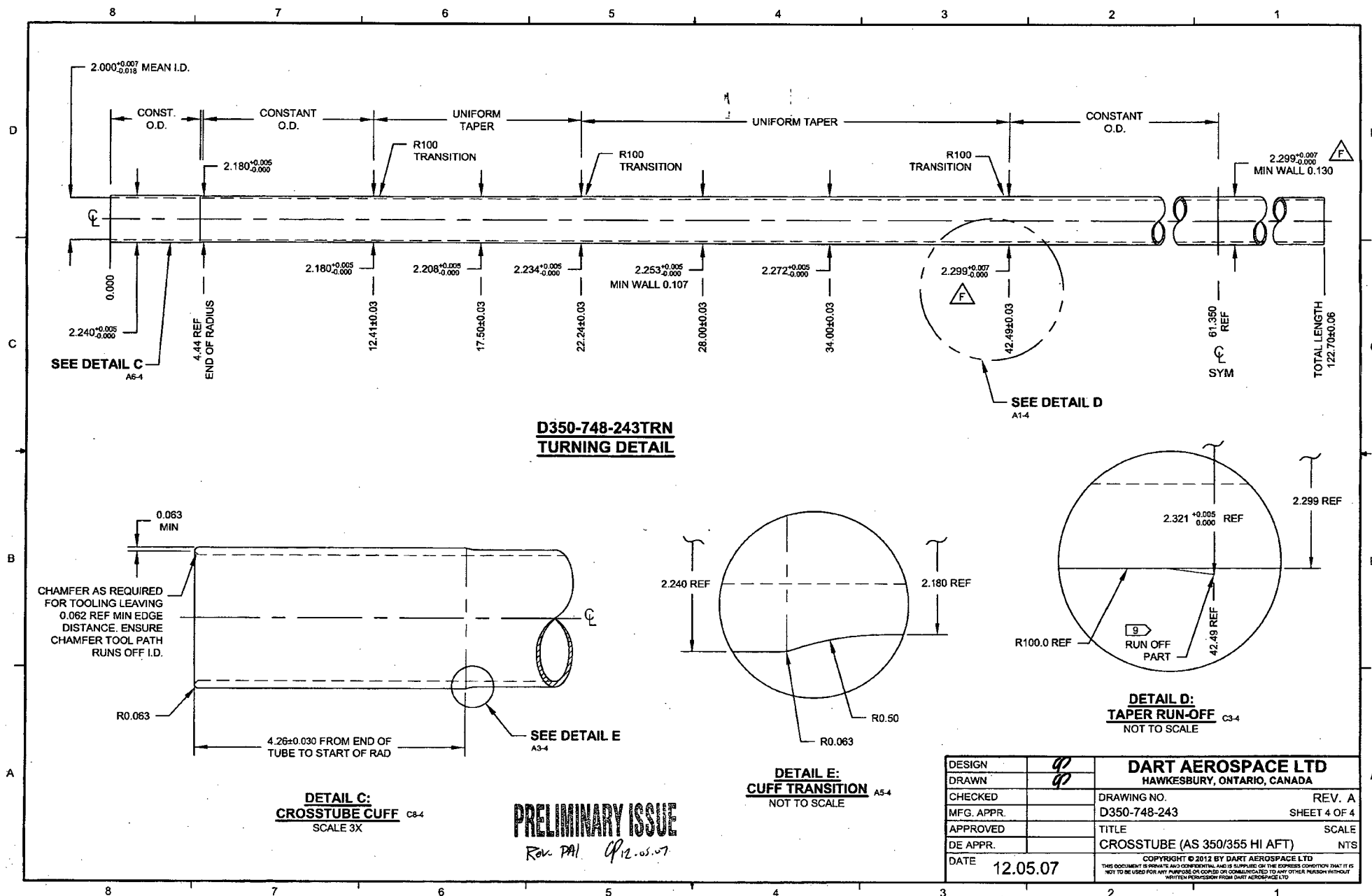
PRELIMINARY ISSUE

Rev. DA1 P12.05.07

A	NEW ISSUE		CP	12.05.07
REV.	DESCRIPTION		BY	DATE
DESIGN	DP	DART AEROSPACE LTD		
DRAWN	DP	HAWKESBURY, ONTARIO, CANADA		
CHECKED		DRAWING NO.	REV. A	
MFG. APPR.		D350-748-243	SHEET 1 OF 4	
APPROVED		TITLE	SCALE	
DE APPR.		CROSSTUBE (AS 350/355 HI AFT)		NTS
DATE	12.05.07	COPYRIGHT © 2012 BY DART AEROSPACE LTD		
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.				







DART AEROSPACE LTD		Work Order:
Description: Crosstube Assembly (AS350/355 High Aft)		Part Number: D350-748-241
Inspection Dwg: D350-748-241 Rev: F		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

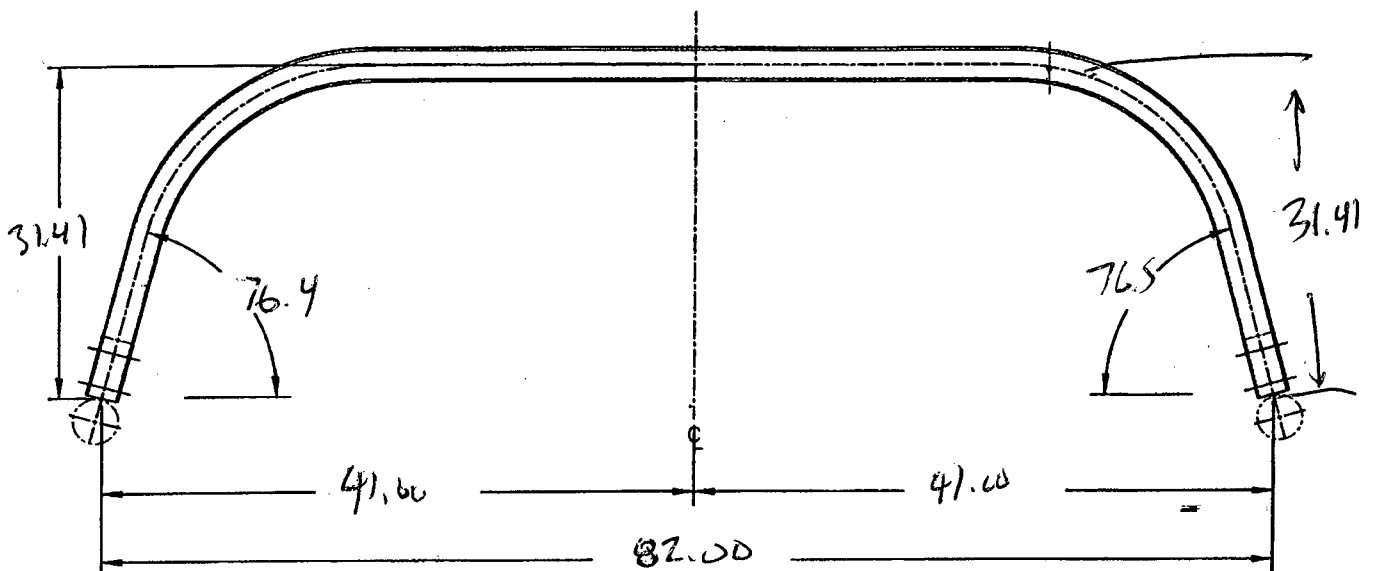
Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.240/2.238	✓		MIC	CNC-04
	2.180	+0.005/-0.000	2.184	✓			
	2.180	+0.005/-0.000	2.182	✓			
	2.208	+0.005/-0.000	2.212	✓			
	2.234	+0.005/-0.000	2.239	✓			
	2.253	+0.005/-0.000	2.258	✓			
	2.272	+0.005/-0.000	2.277	✓			
	2.299	+0.005/-0.000	2.301	✓			
	0.063	+/-0.010	.063	✓		VERN	CNC-08
	4.26	+/-0.030	4.252	✓			
	R0.063	+/-0.010	.063	✓		RG	
	R0.50	+/-0.030	.50	✓		RG	
SIDE B	2.240	+0.005/-0.000	2.242	✓		MIC	CNC-04
	2.180	+0.005/-0.000	2.183	✓			
	2.180	+0.005/-0.000	2.183	✓			
	2.208	+0.005/-0.000	2.258/2.211	✓			
	2.234	+0.005/-0.000	2.237	✓			
	2.253	+0.005/-0.000	2.250	✓			
	2.272	+0.005/-0.000	2.277	✓		RG	
	2.299	+0.005/-0.000	2.304	✓			
	0.063	+/-0.010	.063	✓		VERN	CNC-08
	4.26	+/-0.030	4.247	✓			
	R0.063	+/-0.010	.063	✓		RG	
	R0.50	+/-0.030	.50	✓		RG	
	122.70	+/-0.060	122.750	✓		TAPE	ED-11

Measured by: KL	Audited by: LP	Preliminary Approval: AP
Date: 12-5-08	Date: 12-5-8	Date: 12.5.15

Rev	Date	Change	Revised by	Approved
A	07.01.17	New Issue (P/O D350-748-201)	KJ/JLM	
B	12.02.02	Dwg Rev updated	KJ	

DART AEROSPACE LTD		Work Order:	
Description: Crosstube High Aft (AS350/355)		Part Number:	D350-748-201
Inspection Dwg: D350-748-241 Rev: E			Page 1 of 1

Required Dimension	Min	Max
Height	31.22	31.48
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06



Comments	
CRUSHING	A: 4.2% ARSES: A: 12
	B: 3.9% B: 9

QC15 Inspection	<i>CP</i>
Date	12.08.09

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	10.08.23	Dwg Rev updated	KJ	<i>[Signature]</i>

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
12.05.11	200	Install (2) D3502-1 SUPPORT & (2) MS21920-20 CLAMP USING DT 8876. Torque to 60-80 in-lbs.		AB 12-5-11		CP 12.05.11 DS1042		
12.05.11	201	QC S		CP 12.05.16		CP 12.05.11 DS1042		

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Tube #4

TOTAL LENGTH - 122.750

FACING 0.0 - (A) 2.244 R.O. 063 →

(B) 2.244 R.O. 063 →

Side (A) → 2.299 ± .007 → ~~2.299~~ 2.361

2.272 ± .005 → 2.277

2.253 ± .005 → 2.258

2.234 ± .005 → 2.234

2.208 ± .005 → 2.212

2.180 ± .005 → 2.182

2.180 ± .005 → 2.181

2.245 ± .005 → 2.245 = 2.240 - 2.256

4.26 ± .030 → 4.26

Side (B) → 2.299 ± .007 → 2.304

2.272 ± .005 → 2.277

2.253 ± .005 → 2.258

2.234 ± .005 → 2.237

2.208 ± .005 → 2.211

2.180 ± .005 → 2.183

2.180 ± .005 → 2.183

2.240 ± .005 → 2.242

4.26 ± .030 → 4.260

Wilson

